Opisthorchis felineus infection control in Siberia

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Swiss TPH

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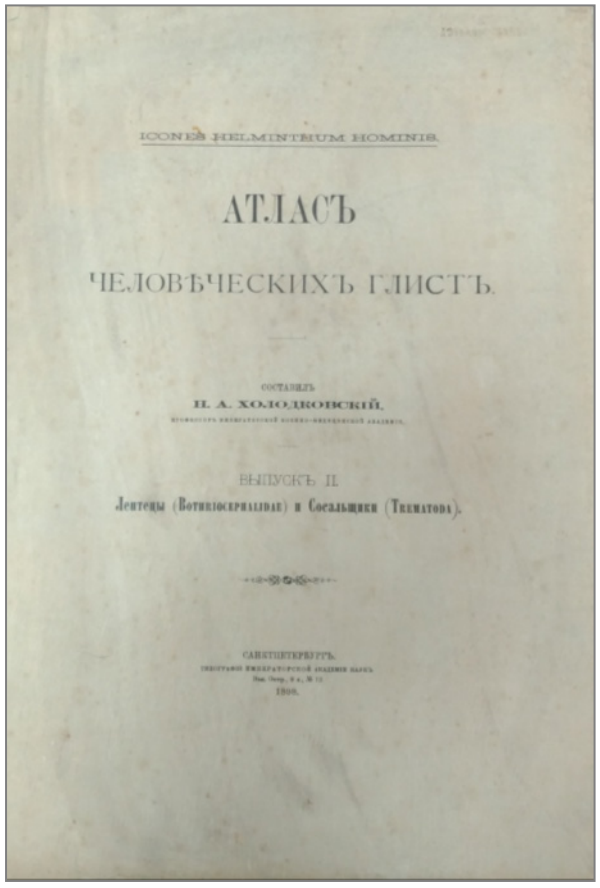
O. felineus discovery in Western Siberia


ICONES HELMINTHUM HOMINIS.

АТЛАСЪ

ЧЕЛОВѢЧЕСКИХЪ ГЛИСТЪ.

составилъ

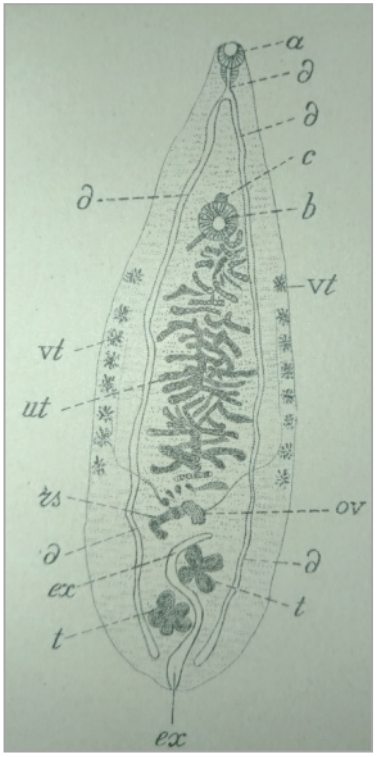
П. А. ХОЛОДКОВСКІЙ.

ВЫПУСКЪ II.

Ленточные (Botriocephalidae) и Сосальщики (Trematoda).

САНКТПЕТЕРБУРГЪ.

1898.



…… On April 3, 1891 Konstantin Vinogradov, Professor of the Medical Department of Tomsk Imperial University, performing the autopsy of a deceased patient found a new helminth that had morphological features similar to the trematodes…

Kholodkovskiy NA, Atlas of human's helminthes. - 1898

Prevalence of *O. felineus* in Western Siberia in 1980-2000

(review of Russian literature)

Acta Tropica 178 (2018) 196–204

Contents lists available at ScienceDirect

Acta Tropica

journal homepage: www.elsevier.com/locate/actatropica

Opisthorchis felineus infection prevalence in Western Siberia: A review of Russian literature

Olga S. Fedorova[a,*], Marina M. Fedotova[a], Tatiana S. Sokolova[a], Ekaterina A. Golovach[a], Yulia V. Kovshirina[a], Tatiana S. Ageeva[a], Anna E. Kovshirina[a], Olga S. Kobyakova[a], Ludmila M. Ogorodova[a], Peter Odermatt[b,c]

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ARTICLE INFO

Keywords:
Opisthorchis felineus infection
Prevalence
Epidemiological studies
Review

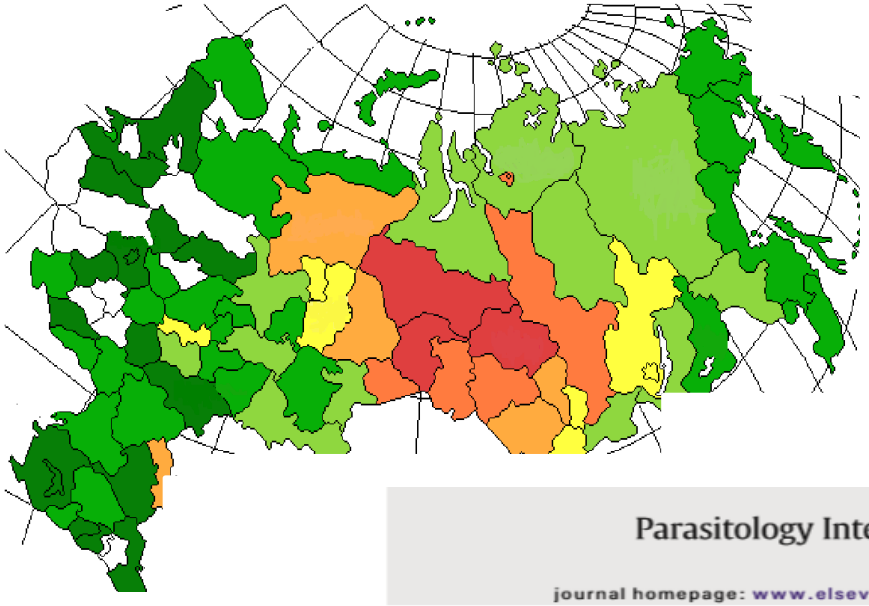
ABSTRACT

In this study we reviewed Russian scientific literature (scientific publications, book chapters, monographs) published between 1 January 1979 and 31 August 2015 from two sources: Main database of the Russian Scientific Electronic Library (eLIBRARY, http://elibrary.ru/), and the Scientific Medical Library of Siberian State Medical University (http://medlib.tomsk.ru/). Specifically, the review details the infection prevalence of *Opisthorchis felineus* (*O. felineus*) in Western Siberia, Russian Federation. From the primary key words screening, 1591 records were identified from which 32 Russian-language publications were relevant. The lowest *O. felineus* infection rate of 0.4% was reported in Tatarstan Republic, and the highest reached 83.9% in the Khanty-Mansiysk Autonomous Okrug. The infection prevalence was lower in children than in adults and increased with age.

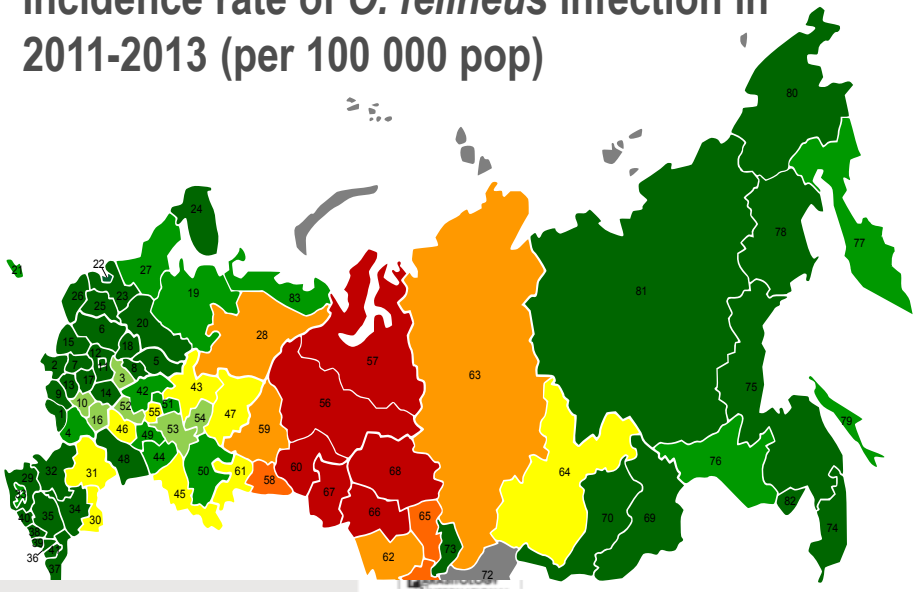
O. felineus infection was detected more often in indigenous population than in migrants. Infection intensity in western regions (Permskaya, Bryanskaya Oblast) was low and varied from 15 to 336 eggs per gram stool (epg), while in endemic regions it reached more than 2000 epg. In some settlements the mean intensity infection was 5234 epg. The high rates of intensity were registered in regions with a high prevalence of infection. Based on obtained data, a map of *O. felineus* infection prevalence in Western Siberia was developed. After mapping the results, the highest prevalence was detected in Tyumenskaya Oblast with over 60%, while the Tomskaya Oblast had the lowest prevalence at fewer than 19.0%. Khanty-Mansiysk Autonomous Okrug, Altaiskii Krai, Novosibirskaya Oblast and Omskaya Oblast had an average level of *O. felineus* infection of 20–39%. According to the results of the review, Western Siberia must be considered as highly endemic region for opisthorchiasis in the Russian Federation. The development of a control program specific for the Russian community is warranted.

Dynamics of Incidence rate of *O. felineus* infection in Russia

Incidence rate of *O. felineus* infection in 1991-1993 (per 100 000 pop)



Incidence rate of *O. felineus* infection in 2011-2013 (per 100 000 pop)



Parasitology International

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0.00-0.15
0.16-0.79
0.80-2.49
2.50-21.99
22.00-52.99
53.00-99.99
100.00 and above

Opisthorchis felineus infection and cholangiocarcinoma in the Russian Federation: A review of medical statistics

Olga S. Fedorova [a,*], Yulia V. Kovshirina [a], Anna E. Kovshirina [a], Marina M. Fedotova [a], Ivan A. Deev [a], Fedor I. Petrovskiy [b], Aleksandr V. Filimonov [c], Alla I. Dmitrieva [a,d], Lev A. Kudyakov [d], Irina V. Saltykova [a,e], Peter Odermatt [f,g], Ludmila M. Ogorodova [a]

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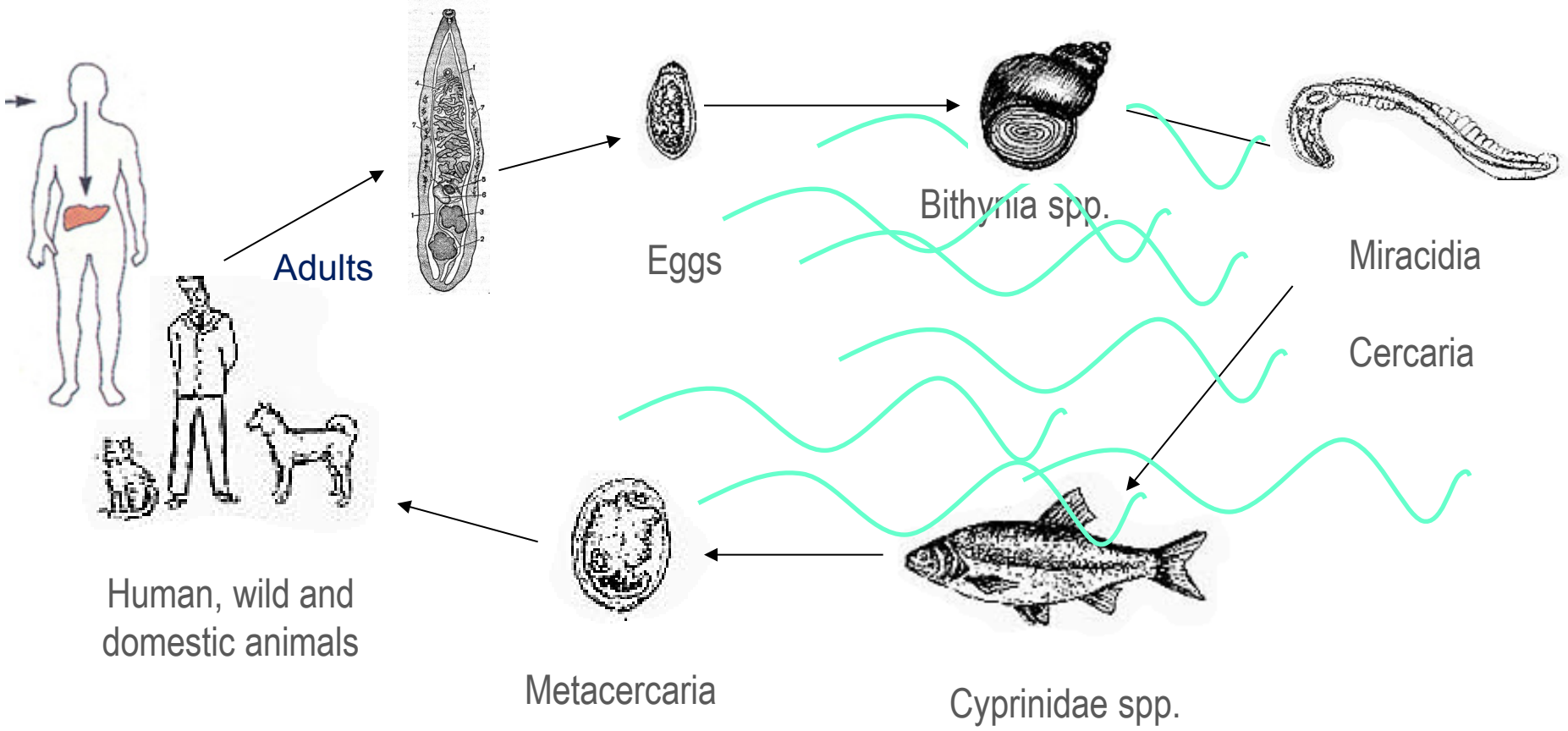
ARTICLE INFO

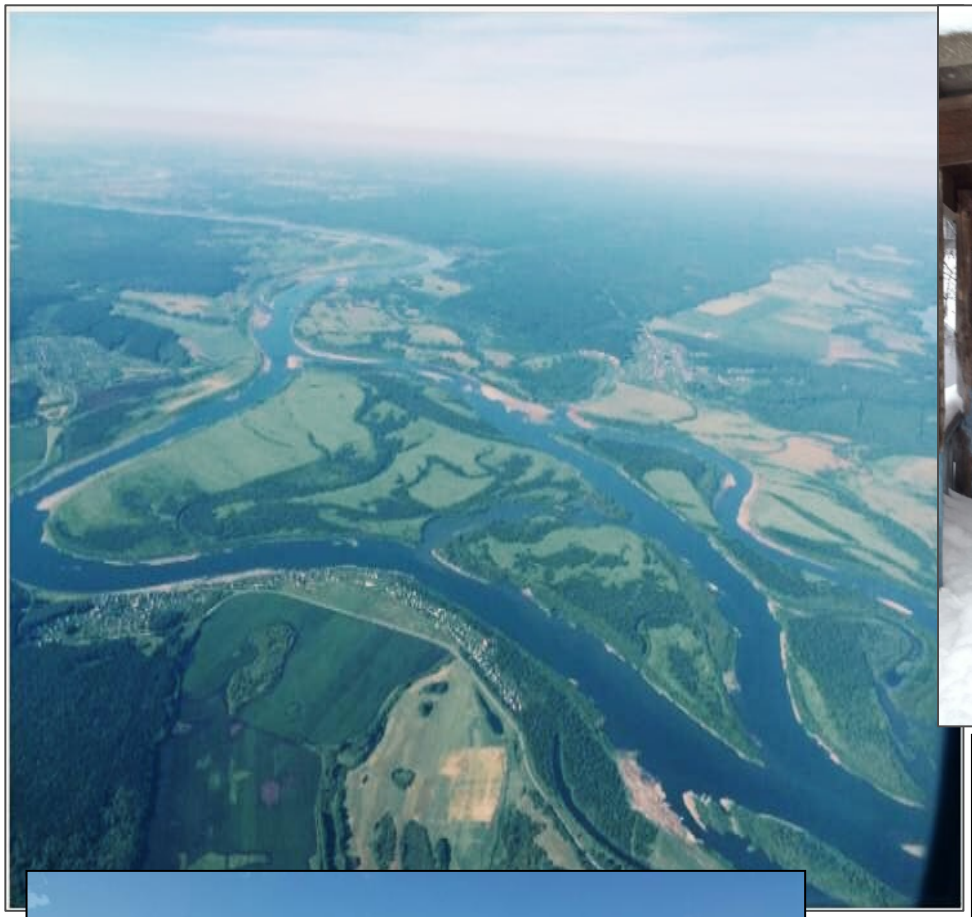
ABSTRACT

Life cycle of the *O. felineus*

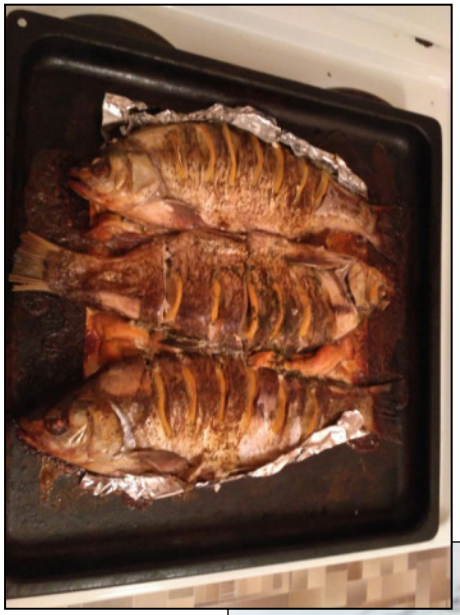
- **Type: Plathyhelminthes;**
- **Class: Trematodes**
- **Family: Opisthorchiidae**



Western Siberia, Tomsk Oblast



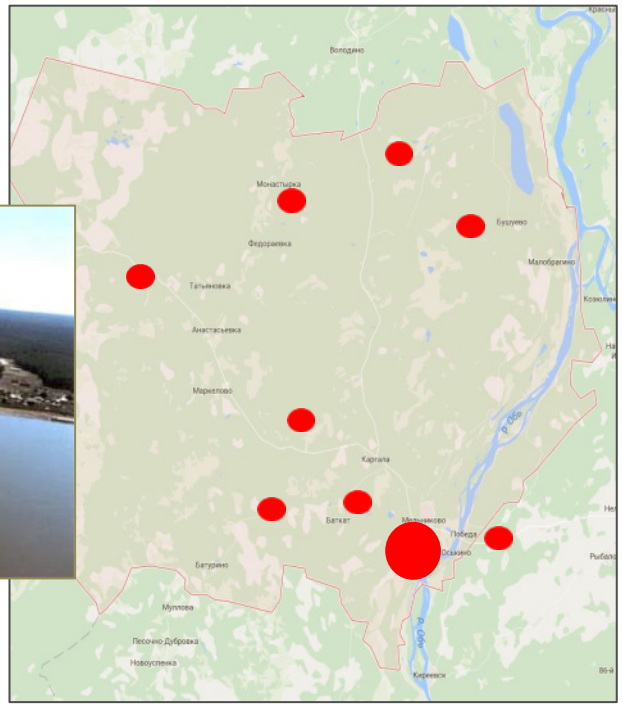
Western Siberia, Tomsk Oblast



Cross-sectional random study in the Shegarsky district

Study sample

- Sampling of villages (n=9 of 37)
  - Suburban area
  - Small villages
- In each village a random sample of household was selected
- All members of households present on the survey day ≥7 yrs of age
- Total number of enrolled, n=600
- Responded, n=487
- 46.1±19.7 years; range 7-85 years
- Total sample (women / men - 341/146)



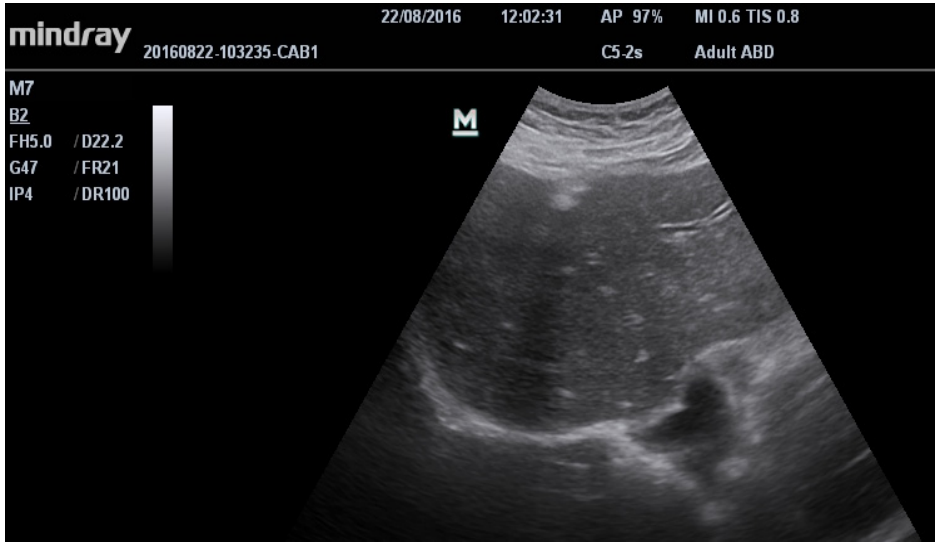
Cross-sectional random study in the Shegarsky district

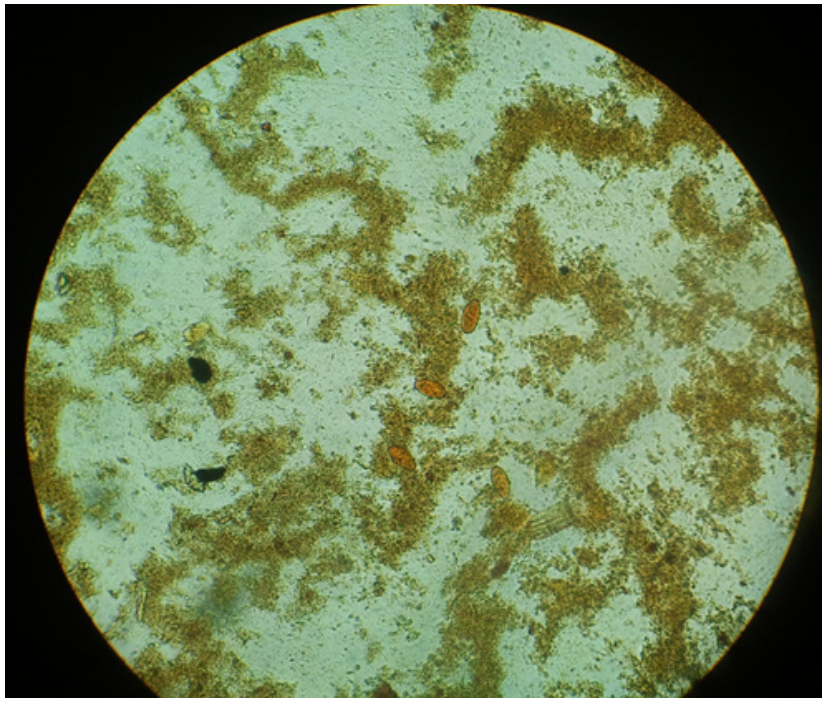
Field procedures

- Informed consent
- Questionnaires (were developed based on the in-depth interview)
- Ultrasound of liver and bile ducts
- Bio sampling

Laboratory procedures

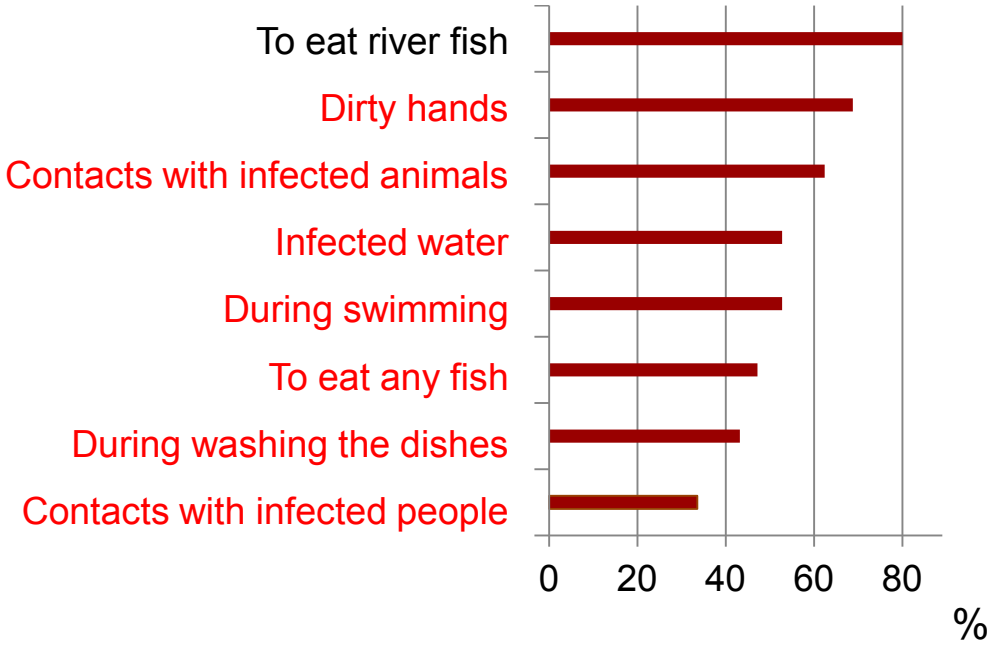
- Stool examination (“Parasep”, DiaSys Ltd, Wokingham, UK) x 2 samples in different days from one patient



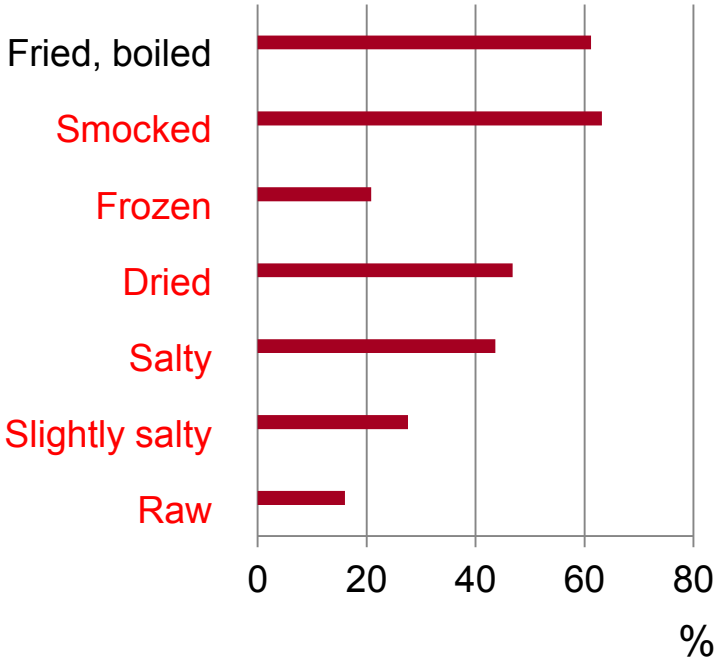


Awareness about *O. felineus*, and river fish consumption

Awareness about ways for transmission



River fish consumption

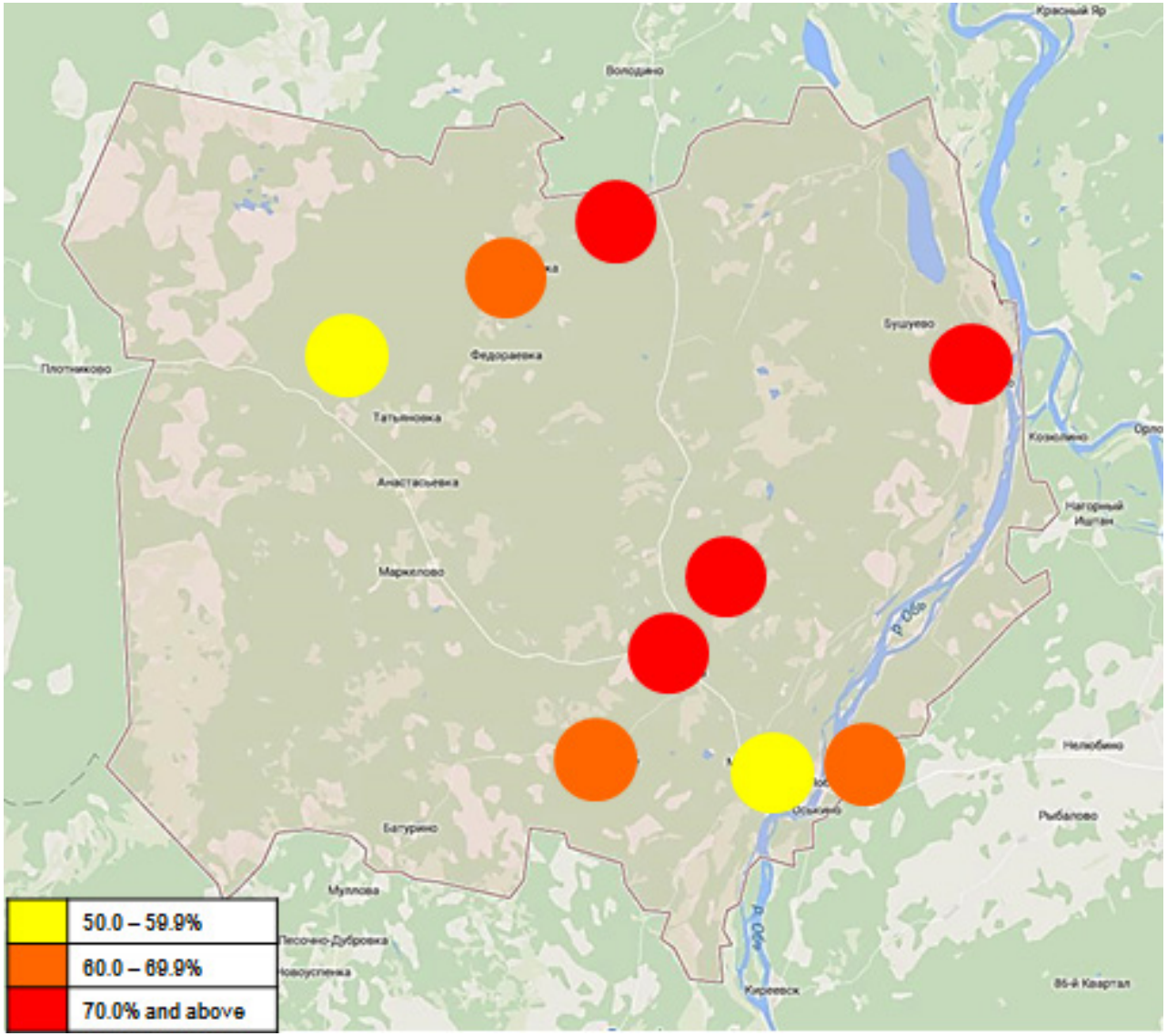


Awareness about opisthorchiasis – **81%**

River fish consumption – **89%**

Shegarskiy study: Preliminary analysis

Prevalence and intensity of the *O. felineus* infection



Intensity of *O. felineus* Infection:

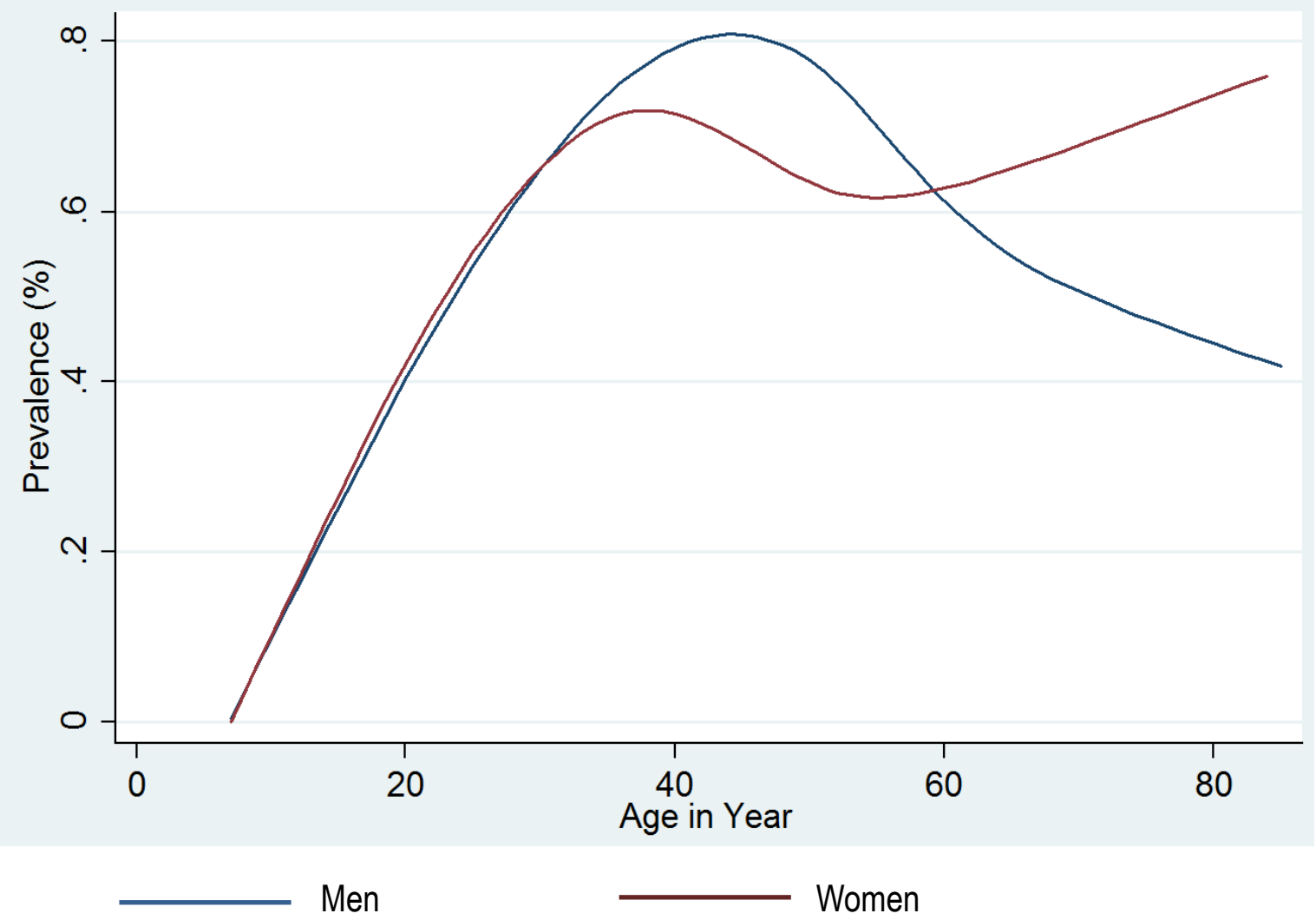
Low (1-999 epg)
82.1%

Moderate
(1000-9999 epg)
16.0%

High (≥10 000 epg)
1.9%

Shegarskiy study: Preliminary analysis

Prevalence of *O. felineus* infection in different age and sex



Shegarskiy study: Preliminary analysis

«Life by the river»

Sample for qualitative research:

- Patients infected by *O. felineus* infection
- n= 20; 46.5±17.23 yrs

In-depth interviews:

- Training
- Sampling
- Preparedness
- Interviewing
- Transcribing
- Analysis

CRITICAL PUBLIC HEALTH, 2017
https://doi.org/10.1080/09581596.2017.1378425

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RESEARCH PAPER

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Life by the river: neglected worm infection in Western Siberia and pitfalls of a one-size-fits-all control approach

Olga Zvonareva[a,b,c], Peter Odermatt[d,e], Ekaterina A. Golovach[f], Marina M. Fedotova[f], Yulia V. Kovshirina[g], Anna E. Kovshirina[h], Olga S. Kobyakova[h] and Olga S. Fedorova[f]

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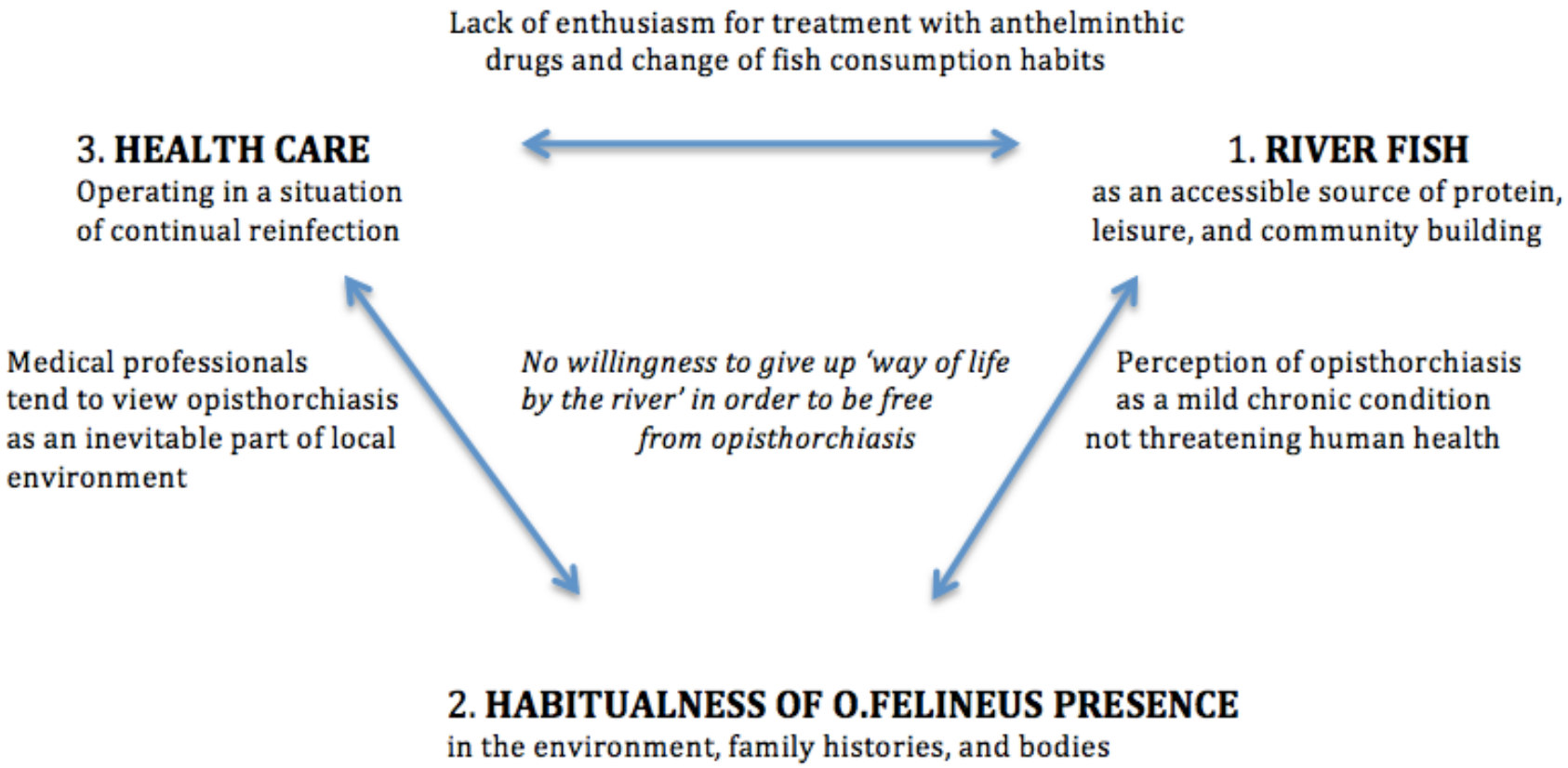
ABSTRACT

The One Health movement aims to provide integrated responses to problems that emerge at the intersections of human, animal, and ecological

ARTICLE HISTORY
Received 3 May 2017
Accepted 29 August 2017

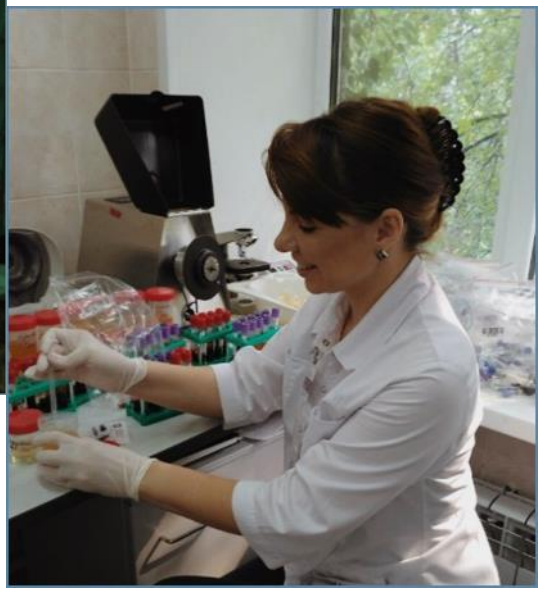
Participatory model of *O. felineus* transmission



Life by the river: neglected worm infection in Western Siberia and pitfalls of a one-size-fits-all control approach, O. Zvonareva et al. Crit Public Health, 2017

Conclusions

- These epidemiological data provide an evidence that *O. felineus* infection is still highly prevalent in Western Siberia
- Results of the full study will be used to develop a comprehensive *O. felineus* infection control program in the Western Siberia
- Participatory modelling in conversation with other types of data and approaches can improve effectiveness of One Health interventions



TOPIC - Tomsk OPIsthorchiasis Consortium

Mission: To combine the efforts of scientists across the world to fight against Opisthorchiidae liver fluke infections and associated diseases and to bridge the gap between research and industry in search for new diagnostic and therapeutic options

Scientific Activity:

- Epidemiology and control
- Diagnostics, Biomarkers, Drug R&D, Clinical Trials
- Biology and Ecology of Parasites
- Host-Parasite interactions

Partners:

Siberian State Medical University, Tomsk, Russia; Institute of Cytology and Genetics, Novosibirsk, Russia; Tropical Disease Research Laboratory, Khon Kaen University, Khon Kaen, Thailand; Swiss Tropical and Public Health Institute, Basel, Switzerland; Leiden University Medical Center, Leiden, Netherlands; Maastricht University, Maastricht, Netherlands; Center for Neglected Diseases of Poverty George Washington University, Washington, D.C, USA; University of Porto, Porto, Portugal; Royal Brompton Hospital, London, UK; Pfizer Russia

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